Production Values: Re-discovering the Hand in Making

by

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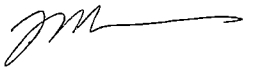
Signed: 

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Abstract

The versatility of clay lends itself to many applications and therefore, modes of ceramic production. With applications ranging from tableware, to sculpture and architecture, its history is deeply rooted in both tradition and industry. As a material, ceramic presents itself as the ideal medium with which to open up a discourse between these two areas, with particular focus on the qualities and corresponding values of the hand-made and machine-made object.

The industrial revolution marked the separation of the hand from the making process. The changes in the method, scope, and scale of production are reflected in the objects and structures in our manufactured environment. In comparison, the hand-produced object is different from the industrial product, differently conceived, differently made, differently used. The values associated with the hand-made and hand skills have also changed in line with advances in technology. While industry may de-value the hand in making, there are qualities that resonate with us as they are inherently human. The questions underlying this research respond to the perceived loss of these qualities through a diminished relationship to materials and the making process.

As consumers, we are also removed from the process due to systems of manufacture that are invisible to us, and through the removal of any visible character of the material or sign of the hand. The process is visible in the hand-made, however, in the traces left by the hand. This provides a connection to the object through an understanding of how it is made.

The research involves a theoretical and practical investigation of ideas relating to the production of both hand and machine made objects. These ideas will be presented within a conceptual framework, with consideration towards functional applications. The practical component of the research explores the potential translation of hand-made qualities to the manufactured object. The outcomes suggest that we can reconnect the hand and mind with object making, by bringing attention to the 'material' qualities inherent in objects, and the sign of the hand, or machine, as an indication of process.

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Introduction

Before we can speak, much of our understanding of the physical world is gained through touch. We negotiate space, volume, texture, weight and form directly with our physical senses, but predominantly with our hands. Our hands seem to operate instinctively, to gesture, to touch and to hold, independently of our intellect. However, the intuitive use of our hands, together with intellect (the connection between hand and mind), could be a key to learning and further negotiating our existence in an artificially constructed environment. Just as we may be shaped by the environment we live in, likewise, we also contribute to the shaping of our environment.

Advances in technology have continually changed the way in which materials can be manipulated and configured into new forms and applications. The constructed environment has increasingly reflected mechanical and systems-oriented production, particularly in 'developed' countries, where industrialisation is seen as synonymous with progress. Perhaps not the most obvious change, but one that can be considered on reflection, is the displacement of the hand in the making process. Where technology, or tools, were once an extension of the hand, digital technology and computer-aided manufacturing have often replaced manual aspects of the process, enabling a more complete separation.

In the process of transferring manual skills to the machine, is there a possibility that we have become 'out of touch'? One of the underlying themes in this study is the apparent disconnection between people and things - objects, the built environment, experiences - in technologically advanced societies. Many of our experiences are indirect, mediated by various forms of technology. As consumers, and even as designers, who create these experiences, there is little direct contact with the process of creation. The effect of this physical separation between the designer and making process is explored as well as the translation of this separation to the manufactured object.

A comparison of hand and machine-made objects presents some tangible, and not so tangible, clues. The fact that we can differentiate between them points to some obvious differences, the most visible being the result of the processes that are used to make them. In the hand-made, this tends to be highlighted, whereas in industrial production these traces are removed. Not so tangible, or rather more subjective, are the qualities that appeal to our senses. The variable status that has been attributed to both typologies could suggest a market driven preference, not necessarily an aesthetic one. The appreciation of one over the other may also be culturally specific, or influenced by other socio-economic factors.

The dialectic between the hand-made and machine-made is explored through the medium of ceramics. Ceramic presents itself as the ideal medium to enter this dialogue as there are rich traditions in both craft and industry. The focus of the research therefore refers primarily to functional ceramics, which encompasses the hand and machine-made, with a point of difference in the response, in the representation of outcomes within an artistic framework.

In the process of creating the work for exhibition, the values associated with hand and machine produced objects are questioned, contributing to a discourse concerning the contemporary role of the hand-made and the hand-making process. As objects can say much about the culture they are derived from, so they can be used to convey the outcomes of this study, and consequently, to pose further questions.

The motivations and experiences that I bring to this research, stem from my cultural background, industrial design and fine art education. There is an interesting parallel between my own cultural background (English/Japanese) and the legacy of ceramics in these countries, with the subject of my investigation. England, with its industrial ceramic heritage, notably produced fine bone china that was delicate, refined and appealing to the socially upward. Japan, in contrast, had developed an aesthetic tradition emphasising the raw, earthy qualities of clay in hand-formed ceramics where asymmetry and imperfection were valued.

On a practical level, my interest in ceramics first began in relation to my honours studies in industrial design, but has since shifted focus in response to a need for a sense of connection with materials and process that I felt was lacking in the design field. Therefore, the practical investigation of ideas reflects the personal experience of engaging with the qualities of clay, as well as representing broader interests.

The outcomes of the research suggest a movement away from the nostalgia of the handmade, with traditional forms and techniques, to the possibilities inherent in materials, technology, forms and processes. Thus, the language and systems of design are carried through to my work in ceramics. The ideals associated with industrial production - uniformity, perfection, repetition - are questioned and as a consequence randomness, imperfection and accidents encouraged.

The following research questions will be addressed in the exegesis:

Research Question One: Are the qualities of the hand-made lost in the machine-made environment?

Research Question Two:
How can we re-discover the hand in making? Does a closer understanding of materials and the making process strengthen the connection between the maker and the made?

Research Question Three: Can the qualities of the hand-made be applied to machine-made objects?

This introduction has discussed the conceptual framework of the study. Chapter One will examine the impact of technology and the machine on the nature of production and the displacement of the hand in the making process.

The separation from making is explored further in Chapter Two, in relation to the design process, and how this may affect the outcomes. Ideas about perfection and imperfection are also introduced in this chapter, giving an indication of how the work will develop.

Chapter Three discusses in detail the practical development of ideas that contribute to the exhibition of work for examination. The concluding comments summarise the outcomes related to the initial research questions, limitations, and areas of further research.

Chapter 1: Industrial Evolution

Humans have had an interesting relationship with machines since their invention. Films such as *Metropolis* (Lang, 1927), *Modern Times (*Chaplin, 1936*)* and *2001: A Space Odyssey* (Kubrick, 1968) could be seen as a response to the impact of technology as viewed at the time, and speak of the imminent possibility of humanity and the world we live in, being taken over by machines. Major themes that are raised in these films are the mechanisation of humans, or the humanisation of machines, power and control, and the anonymity of the worker. The ultimate machine is one that is 'created in the image of man, that never tires or makes a mistake' (Lang, 1927). But somehow, they are always flawed, evil, or malfunction and the moralistic humans win in the end. Machines (or androids, or tin-men) that are made in the image of humans are always missing something that will ultimately make them complete: a heart, or the ability to feel emotion. This is imposed by humans as a way of denying them the ability to be accepted as human. The example of Hal in *2001: A Space Odyssey* gives the machine human qualities, such as a voice, but also, the more frightening attribute of intelligence.

Ultimately, humans are concerned with having control over machines, not the other way around. To people in power, machines represented progress and efficiency without the inconsistency (and possible revolt) of the human worker. To the workers, their existence is further devalued by the perceived superiority of machines, and a force they would have to compete with. Ironically, for the workers in *Metropolis*, their attempt to destroy the machines will in fact lead to their own destruction. As a result of endless hours of physical, but mindless work, they succumb to the rhythm of the machine, losing the ability to think for themselves. The division between the people who control the machines (the brain) and those who are controlled by the machines (the hands) creates a co-dependency, but one that is mediated by the machines.

According to Benjamin (Leach, 1999) the human psyche is in essence an organic mechanism, which is constantly adapting to its physical surroundings. Through this chameleon like instinct, which he refers to as *mimesis*, the human being seeks to replicate aspects of the external world. The mechanisation of human movement and gesture, exemplified by Charlie Chaplin in 'Modern Times', replicates the movement of the machine.

These enduring images, while reflecting the era of rising industrialisation in which they were produced, still have relevance today. The contemporary dance production '*The earth beneath our feet*' (TasDance, 2006) led me to question the almost clichéd representation of machine-like movement favoured by choreographers. Movement becomes articulated and devoid of natural fluidity, the dancers faces expressionless, the sequences are repetitive and synchronised. The dancers are controlled and moulded by the choreographer. Their

technical skill can be manipulated to an extent to achieve something seemingly close to perfection and seamlessness, however there is still a natural element involved. They appear 'in sync', yet slight variation between the individual dancers produces a certain harmonious discord. The dancers seek to embody the loss of humanity in a mechanised world, yet by being human, the inevitable human traits emerge. It is interesting to observe that modern dance, which embodies the characteristics of human movement, is so often used to convey the opposite.

In the context of production, the Industrial Revolution represented a major transition from manual to mechanical labour. Machines enabled more efficient methods of production that could produce volume to meet demand. This was influenced by Henry Ford's development of production lines and F.W. Taylor's 'Scientific Management' (Barnes, 1955), which were aimed at improving efficiency and increasing productivity. There was still a need for manual operation and for skilled craftsmen in the making of machine parts and tooling. However, many highly skilled trades were replaced and the division of labour that was required to produce goods on a large scale led to specific repetitive tasks that disconnected workers from the process as a whole.

The industrial era changed the way objects were made. Systems of production became increasingly complex, not just in technical advancements but also in the variety of objects that could be produced and the use of new synthetic materials, such as plastics. These systems may have been largely invisible, and beyond understanding, to the general population.

Manufactured products, and craft objects before them, have also developed in line with developments in tools and production techniques. The form of an object is the result of certain constraints and expresses a certain state of technique. Innovations in technique have gradually blurred this formerly clear-cut causal picture as Chaput (1988, p.183) states:

> Objects can no longer be apprehended as aesthetic and technical wholes; they have been fragmented. It is no longer possible to master the composition of an object through the old semantic procedure - component parts, structure, system, product.

The fragmentation that is described brings attention to the change in how we have understood and related to objects throughout history. The pre-industrial method of production was always by hand. Since then, the status of the modern object has been dominated by the opposition of the unique (hand-made) to the mass-produced object (Baudrillard, 1996).

While the impact of technology could not be foreseen at the time, the distinction that we now make between the hand-made and machine-made is representative of two very different ideologies. Like perfection and imperfection, they are comparative terms and, rather conveniently, allow for differentiation between the two. On a basic level, hand-made objects could be described as unique, irregular, imperfect, traditionally involving the use of natural materials. Characteristics of the machine-made, on the other hand, could include uniformity, precision, economy, multiplicity, and the use of synthetic materials.

While a distinction may have been created between the hand and machine-made in terms of physical qualities, there is also increased complexity especially in terms of values. We can see that values change, depending on social, economic and other factors. One cannot simply generalise and say that machine-made products are inferior to those that are hand-made. In both cases, there is a difference between things that are made to last (quality) and things that are made for short-term gain (quantity), which reflect the time and resources that have gone into their manufacture. The hand-made could be seen to represent care and quality in its making, however it could also represent objects made in quantity by cheap labour. Likewise, there are highly engineered products and mechanisms made with machines that represent precision and quality.

The introduction and subsequent domination of machine-made products changed the role and status of the hand-made over time. Advances in technology enabled mass-production and therefore manufactured goods became available and affordable to the masses, or at least something to aspire to. With aspiration, came desire and a perceived need to acquire, which was often fuelled by advertising. This created certain expectations from consumers (especially in terms of cost), making the hand-made un-competitive in most cases. Being closely aligned with craft and tradition, the relevance of the hand-made to large-scale industry diminished, and consequently its value outside craft traditions.

In one sense, the rise of modernism gave a certain validity to the crafts movement and strengthened its ideals. In response to the changes taking place, the craftsperson rejected industrial techniques and returned to hand-making and the anonymity of pre-industrialist production. While this may position the crafts as antithetical to industry, it was not always mutually exclusive to modern movements in design. In fact as well as acting as a counter-point, they contributed to its development. The foundation of the Bauhaus (1919-1922) relied heavily on the English Arts and Crafts movement. The combination of arts and crafts was seen as an effective response to the 'monstrosities of industry'. This did not imply that everything should be made by hand but that there should be a collective rather than individualistic approach to the products of art. With professional artists and designers working together with students, experimentation and the study of materials and techniques

were of primary importance. After 1922, the school changed its emphasis towards functionalism and the practical nature of machines and technology (Greenhalgh, 2006).

A number of concepts typify the entire Bauhaus movement (and Modernism) at this time; idealism, a joining of creative forces, a focus on function, structure, the use of simple forms and an aversion to ornament. This change saw the application of handcraftsmanship to the production of prototypes for industry, contributing to the development of an aesthetic appropriate to machine production. Geometry was seen as the basis for the new 'machine style'. Together with the rejection of ornament and marks of personal expression and handwork, it was a style that eventually came to be associated with industrial production. Two versions of a tea infuser, created in the Bauhaus metal workshop by Marianne Brandt in 1924, reflect the change in philosophy. The pot in silver (fig.1) reveals its handcrafted nature in the repeated marks of the hammer, whereas the brass version takes the same shape, but its bowl is smooth and reflective, masking all evidence of its hand manufacture and implying that it could have been made by machine (Marcus, 1995).

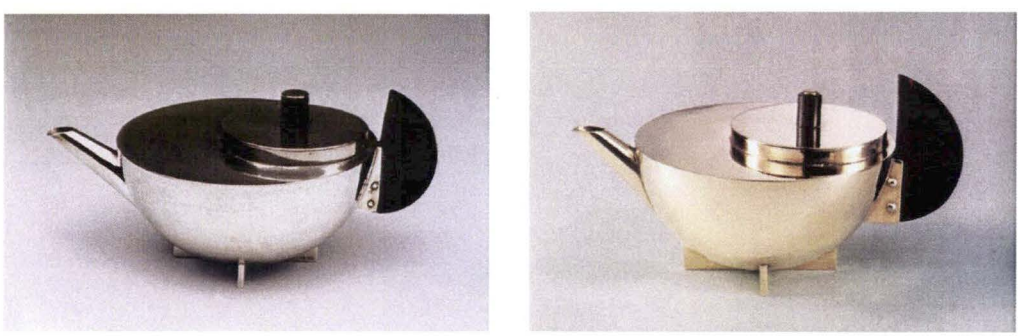

fig.1

The preference for even the apparently machine made was not immediate. Some handcrafted objects, made in the machine style, were associated with 'cheap machine products'. Therefore, the arbitrary placement of values could also be applied to machine-made products that are apparently made by hand.

If we think of the hand-made only in the context of machine-production and mass markets, it could be seen as a 'niche' market representing a particular aesthetic or style. This is only relative to newly established systems of production and the modern economy. Does this reflect the inherent value of the hand-made object and all that it represents? The question therefore arises of where value lies and how it is created.

Chapter 2: Manufactured Perfection

Every tool and making process leaves its mark on the finished work. Whether these marks are left as a feature is a matter of choice. They may act as a point of differentiation, in the case of the hand-made, in order to convey the method of production. Dormer (1991) suggests:

> The metaphorical content of handicraft rests in its expression of a way of labour and a way of life that is rare in Western or western style economies. Contemporary craftspersons have often found it useful to exaggerate certain iconoclastic features of their craft as a form of product differentiation. A wobbly line here, a slightly askew handle there, reminds the consumer that this thing is a product of the hand.

Similarly, there may be an attempt to make this less obvious by removing visible traces, for example, by sanding or polishing the surface. This is more often associated with the machine-made object. Since the industrial production of ceramics evolved from hand-making techniques, one would expect that there wouldn't be such a distinct separation in terms of physical qualities. However, modern manufacturing can produce things that cannot be made by hand. For example, slip-casting can produce a consistent wall-thickness and glazes are applied consistently in a controlled environment. The nature of the industrial process is controlled and doesn't encourage variation.

The culture of perfection that this creates, puts imperfection in a poor light. Based on observations of my own behaviour at least, faults and imperfections found in machine-made goods are always visible - and when identified, become almost magnified in scale. A tiny chip, or surface mark can be seen as a huge flaw and the object suddenly loses its value.

Surface perfection has become a sign of industrial culture. There is an expectation for something new to be perfect and unblemished. Our idea of the factory produced object is that quality-control takes care of 'rejects' (otherwise imperfect) before they arrive on retail shelves. Monetary value is also attached to this; an 'imperfect' product is labelled as a 'second' and therefore has differing status. Perhaps as consumers, we re-enforce this, by rejecting anything less than perfect. It is also possible that, like the tolerances in highly engineered products, our senses have become more highly tuned.

The 'perfect' product that comes from the production line can be something of a facade. One could say that its perfection is 'manufactured'. In order to achieve the desired size, shape, surface, and thickness of a ceramic object, factors such as shrinkage, warpage, firing temperature, glaze fit and type of clay have to be taken into consideration. The design also has to take into consideration quantity, complexity (to reduce the possibility of

seconds), consistency and function. Furthermore, the preliminary tests and failures that are made in the development of the product are unseen, so we may assume in our viewing of the 'perfect' object that it was a straightforward process. In a sense, the invisibility of these constraints maintains the ideal of perfection in the industrial product.

This ideal continues to be maintained in the collected object. In the world of antiques, marks are valued on some objects but not on others. Age can add value; marks made over time give the object a sense of history and ownership, signs that the object has been used and touched by the hands of others. Others seem to be destined to escape their life of use, or misuse, and become objects of contemplation, which increase in monetary (and perhaps cultural) value the longer they are kept in 'mint' condition. Therefore, a mass-produced object can also be elevated to collectible status by being taken out of circulation in this way, its rarity rendering it unique.

On the other hand, we don't tend to scrutinise the hand-made in the same way. We are more willing to accept imperfections and irregularities as signs of character, or a narrative of methodology. One view is that the value of the handmade lies in the inherent uniqueness of its objects. Perhaps they are a closer reflection of reality, or of life? As Dormer (1991) asserts: 'It is only in the context of the smoothness of our society - smooth surfaces, smooth running, smoothly safe and smoothly reassuring industrial design - that the luxury of imperfection can be indulged.'

Nevertheless, there have been attempts to mimic or replicate the hand-made by reproduction. Instead of preserving the unique aspect of the hand-made however, standardisation is realised. There is something deceptive in the intention, and not entirely convincing in its resolution. For example, surface veneers such as linoleum or tiles for floors, where a pattern (usually depicting natural materials such as slate or stone) is repeated over a large area. There is usually enough visual accuracy over a small area, but from a distance, the eye can distinguish the repetition, giving away its mechanical origins.

The idea of customisation has been applied to manufactured objects to give the illusion of individuality, or rather, giving the consumer of the object the illusion that it reflects his or her individuality. This is usually seen in the variation of a basic model, in the availability of a range of colours, accessory options or choice of surface finish. This choice is multiplied by the number of models generated of any given product. Mobile phones are one such example. Where the ownership of a mobile phone was once a point of differentiation, now there is also the need to express the personality of the owner. The consumer exercises his or her individuality through choice. While this indicates a perceived need for individuality, it isn't inherent in the object. There are always two, or more, models alike with enough variables to provide a semblance of difference.

It may be possible with advances in computer technology to randomise perfection, giving the appearance of differentiation of pattern and surface that we associate with crafted work. This could introduce an element of ambiguity, where one cannot be sure what is handmade, or not. In effect, this may bring in to question the foundations of the status of craft, in that it produces things that machines cannot imitate (Dormer, 1997).

An interesting study was initiated by Janet DeBoos, Head of Ceramics at the Australian National University. The opportunity arose, through a connection to a manufacturer in China, to put her hand-thrown tea service into production. The objective, from her point of view, was to test the null hypothesis that 'there is no difference between studio produced handmade objects and factory produced objects that just look handmade' (DeBoos, 2005). The original porcelain pieces were to be translated into slip-cast bone china, from the samples and drawings provided, by specialist mould-makers at the factory. In terms of the outcome, the differences were not immediately obvious. Observations made by DeBoos point out the similarities of the factory and the production pottery, except that every piece in the factory is identical. The factory still has a lot of 'hands-on' in the making and therefore there is room for the 'remaking' (slight re-interpretations through mis-communication). Also, 'makers' seem to make different ceramic designs from those produced by 'designers'. As DeBoos (2005) describes, there is an understanding of the way materials behave during firing, how a cup will feel in the hand, how liquid leaves a spout, which seems to produce more seamlessly functional products.

What of the 'mark of the maker', which is assumed to be embodied in the craft object? It can still be said to exist in the seemingly identical pots made by the production potter. In this case it is still connected to the individual, something the craft object shares with the art object. Here authenticity is preserved in the original. Historically, the work of art that was manually reproduced would be considered a copy, even a forgery. The process of (technical) reproduction is more independent of the original. The instant the criterion of authenticity ceases to be applicable to artistic production, the total function of art is reversed (Benjamin, 1969). To preserve the unique is a contradictory idea. The unique element in the hand-made object, when replicated, is no longer unique. When a work of art is designed for reproducibility, it ceases to be art. Or does it?

Multiplicity, or the potential for reproduction is a basic design principle. The maker is non-specific, or anonymous, so authenticity is not a problem apart from the issue of intellectual property and its manifestation as copyright. Here, the emphasis changes from the real to the virtual. Design as a profession did not exist before the Industrial Revolution, where the rise of mechanised mass production necessitated the separation of making and designing activities. The word design is derived from the Latin word *disegno*, for drawing, and during

the Italian Renaissance referred to the preliminary drawing or plan for a finished piece of work (Greenhalgh, 1997). Design is therefore is characterised by its separation from making, or disengagement from the material.

This is something that I have been aware of in my own experience of industrial design. A broad understanding of a range of materials and manufacturing processes was provided (in the context of serial production), but for practical reasons this knowledge was usually theoretical and not very hands on. That is not to say that the course did not have a practical component. There were quite intensive periods spent in the workshop with full access to machine tools, vacuum forming, sand-blasting equipment, making models and prototypes. However, this usually meant making something that *looked* like a kettle or hairdryer, but was actually very solid and sprayed with automotive paint. Occasionally, there was an opportunity to make full scale prototypes (such as furniture) where the materials, and therefore processes, were closer to those that would be specified for production. In most cases though, the model would be a simulation of the real thing and other representational methods would be used, such as marker 'rendering', technical drawings (AutoCAD), forms made of polystyrene foam, or 3D computer models. Often this was because it was not possible to make a model, for example, that required injection-moulded plastic parts as the cost of tooling would be the same for one object as 1000.

Hours were spent in the realisation of a product while making it out of materials other than those specified in the design. Therefore, materials were specified that the designer would have little practical knowledge of, which would potentially contribute to problems inherent in the design. As with most materials, natural or synthetic, there are unique characteristics or behaviours that become apparent when working with them. Without this working knowledge, it would be difficult to make informed decisions about the suitability of the material for a particular application, and to allow the characteristics of the material to inform the design. Not all designers have the inclination or affinity to work directly with materials. Most get by with a general knowledge that can enable communication with more specialised technicians or engineers that can help to realise their designs.

The adoption of new technologies has further distanced the designer from making and even drawing. Most of the work that used to be manual; drafting, visualisation and model making, is now computer-based. In fact, most of these processes can be integrated, for example by transferring AutoCAD files to 3D modelling programs and so on. Drawings can also be transferred directly to machinery for the fabrication of parts, or rapid prototyping. Access to these technologies has rapidly extended the boundaries of what can be achieved in design and architecture, in both form and construction techniques. Reliance on digital technology alone could potentially be problematic. In screen based drawing programs, the sense of scale is distorted, and while complex models can be made that can be viewed at

every possible angle, there is no tactile element. A sense of scale, proportion, weight, and material behaviour, can really only be gained by working at 1:1 with real materials.

Developing a direct knowledge of materials and processes can inform the language of the designer, providing a real rather than a virtual understanding. Objects conceived in virtual space, lack a certain tacit component of making. Tacit knowledge describes the manual skill, experience and intuition that embody the skilled act that is, by definition, unspeakable. It is most readily understood in manual abilities; it is evident in the ability of musicians to play their instruments, and potters to throw their pots. These are abilities that cannot be easily translated to another individual except through a prolonged process of practice and learning (Callicott, 2005).

In some cases, design could be described as being a product of the imagination, but not of the hands. The expectation of the finished product is therefore limited by the imagination, or a pre-conceived idea. With the possibility to translate the idea to a finished product without any physical handling, it is possible that the outcome may be different from the so-called hand-made. This is perhaps what DeBoos alluded to earlier, with the different design outcomes between ceramists and ceramic 'designers'.

It could explain, to some degree, the apparent loss of evidence of the hand in the modern (machine-made) environment. When referring to the machine-made environment this describes the built environment, domestic and civic, that has been constructed by humans; not just structural elements, but the objects that fill those spaces as well. It implies that the materials and components used for these structures and objects have been machined, fabricated, or manufactured to some extent, by mechanical means. It also implies that while there are still elements that are hand-crafted or hand-assembled, this is not as visible as it once was.

It is generally acknowledged that many experiences in technologically advanced societies are mediated. Indirect experience contributes to a disconnection to basic or natural processes, leading to a limited understanding of how things are made, or where things come from. This is related to the food we eat, the clothes we wear, the water we use and so on. The broader implications of this disconnection can be seen in a lack of responsibility or understanding of the impact of our choices. A recent study into food wastage in the U.S. (The Science Show, 2006), suggested that people waste food because they are disconnected from the source. In other words, they had lost the concept of the life-cycle of food, that it comes from living things. This could be explained by the fact that people see food as a commodity; that it comes from a package, not an animal or farm. Consequently, there is little understanding of the processes that went into the product before it arrived on the supermarket shelf. This is the core of the food loss problem, according to Dr. Jones (who

initiated the study), a problem that could be remedied with educational programs in early childhood, where children actually grow food, pick it, cook it, and eat it. The principle, he suggests, is to learn by tactile experience and by doing things.

A similar comparison could be made with manufactured objects. For example, where there is less understanding or direct knowledge of how something is made, there is likely to be less appreciation of the work and material resources that have gone into the product. As a result, there could be less value placed in the object, leading to wastage, or a culture of disposability. Visibility of the process is the key here. It applies to all the stages of the products life, but particularly at the beginning and the end.

The responsibility of the designer lies at the beginning of the process, in the appropriate use of materials and designing with ecological, as well as economical imperatives in mind. This is where craft can play a role, in re-connecting the hand to the design process. As described earlier, the process is more visible in the hand-made. Therefore, it may be possible to translate this aspect to objects designed for machine manufacture.

From a design/industry perspective we are now seeing a return to craft values in an appreciation of workmanship and skill derived from a more direct knowledge of the making process and a sensitivity to materials. I have been interested in how this can inform the design process, provide insights and a way to re-connect with tradition. This is not so much a nostalgic turning back of the clock, but a re-interpretation of craft values and techniques, embodying skill and tradition, in a contemporary context.

This is particularly evident in the work of Droog Design, which has gained an international profile for their idiosyncratic and humorous approach to design. This approach, which sometimes seems to be anti-design, does question and provoke thought about the appeal of slick 'designer' objects. This is an interesting role for the designed object, as its definition, through its concern with materiality and ideas, could also encompass craft and art. As Droog's founder Remy Ramakers says 'Droog isn't about products... Droog is a way of thinking' (Kaal 2004, p.141). The designers too, are recognised as the author of the idea and interestingly, seem to associate more with the creation of the prototype (as the unique object) rather than the production pieces.

Designs produced by Droog represent a move away from the machine-aesthetic, but in a different sense to the folk-craft of the 70's, for example. In a way, there are elements of d.i.y. that feed back to the public, as some designs use found or recycled objects and can be adapted by the individual. The fact that reproduction by others (for non-commercial purposes) is encouraged is a big step away from the commercialised corporate mentality.

The intention of design *is* to create forms that are easily reproduced or manufactured by others. It is not usually intended for museums, collectors and magazines in its first incarnation, which is often the case with Droog products. The justification for this is that conceptual design is not without functionality: it serves an artistic, primarily cultural purpose (Schouwenberg, 2004). It is therefore completely logical that conceptual design of this kind has appropriated arenas previously reserved for art.

However, is it also possible to translate the prototype into a product, the intention of industrial design? One designer from the Droog stable, Hella Jongerius, demonstrates that 'concept' can be compatible with the industrial process. A methodology based on the exploration of materials and technique is central to her work (fig. 2). As a designer, she is directly concerned with the realities of industry, yet her work is often contrary to the established conventions and values that design and mass production are thought to represent. It is not uncommon for her to use familiar, existing forms (for example, a Ming dynasty vase) and re-make it using unconventional materials, such as urethane rubber.

fig. 2

These objects are expressive of time and place, and an experimental engagement with materials, as well as industry. Jongerius' fresh approach and willingness to experiment with materials has presented opportunities to create new designs for companies where the materials or processes, or the company itself, are unfamiliar to her. This type of collaboration can lead to unexpected results, combining tradition with new technologies. The translation of traditional skills provides continuity and a connection to the past, while the combination with technology creates new traditions.

By crossing these boundaries, the lines become blurred between art, craft and design. There has been a growing discourse about the contemporary relevance of craft and the handmade in recent Australian art journals. Ricky Swallow's meticulous wood-carvings, including his contribution to the Venice Biennale in June 2005, sparked considerable discussion:

> The defining aspects of Swallow's approach are distinctly framed in the Western tradition of the artisan and the language of figuration. The evidence of the hand acts as an oppositional idea, a control against which the appearance of the designed and manufactured can be measured and translated. (Bertoli, 2005)

Some of these objects are in fact modelled on familiar production line items like beanbags and G4 computers, bringing into question a method of production that leads back to the studio rather than the factory.

Is the current discourse representative of a cyclic resurgence of craft, or does it go beyond the nostalgia that typifies the sentiments of Ruskin and Morris? The ideals they espoused were problematic in the sense that each venerated traditional forms and production techniques and were resistant to change. However, this reaction was understandable considering the changes taking place. For the artists and craftspeople who, during the time of the Industrial Revolution, were afraid for their own survival, the continuity of tradition was important. There was nostalgia for the most manual aspects, in order to maintain as much control as possible over the whole production process (de Duve, 1996).

The modern artist faces similar choices, as advances in technology are made available. Why is it still important to be involved in traditional forms of making when newer technologies are available that make the job less tedious? As we can see in the example of Swallow, the pursuit of labour intensive craft practise isn't an end in itself. Of course, this aspect is embodied in the work as a measure of time and skill, but it is also conscious of the contradiction it presents in the context of modern society.

It is the choice of artists such as Megan Keating to maintain control over the process. The use of a traditional paper cutting technique, a skill acquired during a residency in the People's Republic of China, has become her trademark. Perhaps because the technique is not familiar to the Australian/Western audience, and the subject matter and imagery is contemporary in nature, disguises the fact that the work is hand-cut. According to Keating (2004, pers.comm., 21 Aug), while the extent of her involvement is not immediately obvious, the use of the hand is important to her way of working. While the finished work suggests machine-like precision there is something to be said for the tactile nature of slicing a fresh blade through layers of paper.

At the other end of the spectrum is Patricia Piccinini, who often commissions others to produce her artwork. This has similarities to the design process, where the various stages of the process are fragmented into specialist fields. The artist, whose technical skills may be insufficient in a particular medium, employs others to realise their concept. While the artist retains ownership of the ideas, and dictate the development of a work to their

specifications, there is always a degree of translation, which invests the work with the skills and experiences of the maker.

The hand, in many cases was rejected by the conceptual and minimalist artists of the sixties. As Sol leWitt (1967, p.79) states:

> In conceptual art the idea or concept is the most important aspect of the work. When an artist uses a conceptual form of art, it means that all of the planning and decisions are made beforehand and the execution is a perfunctory affair. The idea becomes a machine that makes the art.

This suggests there is no evolution in the making process; a process that involves finding out through working on a piece, some of the potential and not the pre-conceived. This means that the piece itself can define or redefine the next step as it is being made. The minimalist artist, Eva Hesse, epitomised this approach.

Minimalism is characterised by the appropriation of industrial forms and systems, abstraction, reductive qualities, modularity and repetition of basic forms. Minimalist artists experimented with readily available components and new materials such as plastic and sheet-metal. Like industrially produced goods, attention was given to the quality of surfaces, usually by removing all traces of the hand. Unlike most minimal artists, Eva Hesse contradicted this notion of replacing the artist's gesture with industrial manufacturing processes. For Hesse, Minimalism provided a visual structure as well as an approach to materials and processes that involved seriality and repetition. However, also characteristic of her work is the tendency to undermine the repetitive quality by asserting the presence of the artist's hand. There is an attempt, through the form and sequence, to suggest an industrial lineage, but it is through the qualities of materials such as latex, that irregularities occur (fig. 3).

fig. 3

An interview with Christopher Alexander (By Design, Sept 9) who laboured on modernism's severance from human values, prompted me to question my own aesthetic preferences. As I was similarly looking at ways to re-connect with human values, it was interesting to find myself with this conflict of interest. It occurred to me that my own aesthetic leanings were a precursor to my current artistic investigation. In previous work, I have tended to created forms sympathetic to the minimalist or industrial aesthetic. As such they could be 'absorbed' into the architecture, however, by introducing elements that embody the qualities of the hand, a subtle shift occurs, suggesting a return to the 'natural' order of things.

The observations outlined above have enabled me to reflect on the various influences that have contributed to the development of a methodology. In the next chapter, these influences will be discussed further, in relation to the studio work.

Chapter 3: Manufactured Imperfection

'We are searching for some kind of harmony between two intangibles: a form we have not yet designed and a context which we cannot properly describe.' (Alexander, 1964)

As a designer or an artist, one is concerned with the material realisation of an idea, or the nature of finding form. This process often involves the creation of drawings and models in order to resolve the idea visually. The designer may then refine the drawings and models, giving exact specifications and instructions so that the design can be made by others. The artist usually carries out this next phase themselves, improving or making changes to the representation of the idea along the way. Here we have two approaches to realising form, one that involves an indirect approach in the simulation of form, and one that evolves through the engagement of materials.

The line of enquiry that the practical research takes is to negotiate the territory between these modes of making. From a personal perspective, it also marks the transition from a design-oriented way of thinking to incorporate an intuitive, materials-based language. This chapter focuses on the evolution of ideas and considerations that have contributed to the resolution of the formal presentation.

As discussed earlier, the hand-made object communicates the method of production through signs of the process, or traces of the hand. A focus for the practical research involved the potential application of this idea to the process of mass-production. The aim in this instance was to introduce the 'qualities' of the hand-made to objects that resulted from industrial processes. Industrial, or semi-industrial processes were investigated as a point of departure. In regards to ceramic processes adapted to studio production, this included slip-casting, extrusion, and other technologies utilised in the making of models or moulds.

As the study evolved further questions arose from the original research questions such as: What are the qualities that we resonate with in the singular hand-made object? Can this be applied to an industrial context and what would this achieve? And finally, can imperfection be manufactured? A set of experimental criteria was also developed with a focus on 'revealing the process'. These included:

- leaving visible traces of the hand or machine
- revealing stages of the making process
- utilising the material qualities or 'challenges' ie. plasticity, shrinkage, warpage, firing temperature.
- encouraging 'accidents', flaws, irregularity

- exploring machine/mass production techniques

A starting point in response to these questions and experimental criteria was to look at the common practise of removing surface imperfections from manufactured objects. In ceramics, this may be the part-lines or seams in moulds, or irregular warping during firing. These 'faults' do not affect the function of the product, but are usually seen as unacceptable as uniformity and consistency are regarded as important. By leaving these anomalies visible, they may reveal a trace of the process, at least something closer to the truth of the process; a process that is different from the hand-made, and therefore not a literal translation of hand-made qualities.

Obviously some differences are not desirable as they do impede the function of the object, for example, a crack in a cup or a plate. In others, the supposed 'fault' could become a feature. It is something to consider, if one is aware of the amount of wastage that can occur in production. Good design and appropriate use of materials can minimise such wastage, but it could also be an interesting exercise to accommodate the natural tendencies of a material and the unpredictable variables in the process.

Presented with a series of seemingly identical objects, differences only become visible through comparison. Consequently, much of the work presented is based on multiples or series, in order to invite comparison. The process of making 'fault-line', discussed in more detail below, illustrates this point and also provides an insight into the development of an idea.

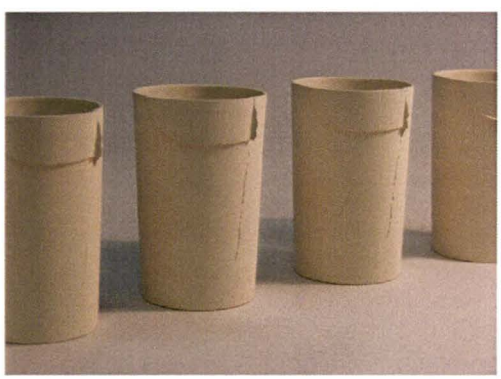

fig. 4

Making 'Fault-line': The original idea was to create multiple part-lines in a slip-cast object. Part-lines are usually kept to a minimum and serve to make it easier to remove a cast object from the plaster mould. Multiple part lines would, in a sense, be dysfunctional, suggesting over-design. The idea was also to leave the lines visible (they are normally removed), thereby leaving a trace of the process.

Instead of making the part-lines integral to the object to be moulded, I decided to follow the idea of breaking the mould, so the fracture lines would become part-lines (similar to case-moulds, which are cracked open to release the model). The plaster could therefore be poured directly over the model, and once 'broken', the pieces fit together (almost) seamlessly, with no need for locating points. The mould then needs to be held together for casting.

Initially, I tried to control where the mould should break, but eventually the breakage found its own lines. The resulting lines were not particularly visible in the first casts, but they did become more prominent with the more casts made. This could possibly be exploited further, as the increasing visibility of the lines indicate continued wearing away of the mould until its 'use value' is destroyed.

fig.5

Finally, after making the first mould, the part-line idea merged with an earlier idea, to represent a 'glitch' in a fictional manufacturing process by having a section dislodged. This was a simple process with the broken mould. The resulting work displayed in series, explores the relation of machine-made objects to our ideal of perfection, and our willingness to accept flaws, intended or otherwise.

fig.6

Another consideration was the type of object, for example, something that would suit industrial production. In this sense they are aligned to function, even as standard 'off the shelf' components that have a functional purpose. However, like the implied use of industrial processes, the objects also *imply* function.

The use of familiar functional forms, and the implied use of industrial processes are devices that place the displayed object in the context of industry. In most cases the object's inherent dysfunction (unfired clay, for example) designates the object as art. This sets up a contradiction as art production and the hand-made have traditionally been antithetical to the characteristics of the machine. According to Rosenberg (1969, p.21) art is often viewed as 'an efficiently conceived, factory produced, self-explanatory aesthetic package'.

While this is not a particular focus of the work itself, the description does correspond with the concept of installation art, as the gallery space and display mechanisms become an integral part of the production, similar to a theatrical stage set.

The final presentation of works are represented as an installation, within a thematic framework. This includes an elongated bench structure and plaster tiles that provide a surface for display. It is intended to support the work, in the sense that it has a practical purpose, but also as a reflection of the ideas contained in the work itself.

The design and construction of the bench structure illustrates the elusive nature of imperfection and the distance between intended and actual outcomes. The initial vision was for something that appeared to be makeshift in its assembly. The actual process of building it provides an example of the factors that contributed to its eventual slightly-too-perfect image. Firstly, the materials were purchased from a timber supplier, fully dressed with a perfect square profile (this was a decision based on time and equipment available). The lengths were slightly bowed, but this was less visible when cut and assembled. There were also natural imperfections in the wood (knots and sap) that had been overlooked by the supplier - evidence of a relaxed approach to quality control - but any remaining imperfections were avoided in my own selection of timber. In the final assembly of the structure instead of appearing makeshift, in my opinion it took on an ordered or considered appearance.

In the making of the display surface, a series of square plaster tiles, perfection was a more desirable attribute. The tiles were to be inconspicuous in their uniformity as they provide a backdrop for the work. More important, was the relationship of the plaster to clay. In the ceramic studio, plaster provides a practical work surface and is used to make models and moulds for slip-casting, or to draw moisture from the clay.

fig. 7

It also provided a link to the original site of production - the studio - without transposing an exact replica of the studio space. Having the 'studio in the gallery' was considered initially, in order to provide a sense of authenticity or reference to the processes involved in artistic production.

So far, the focus of the work has been about veering away from industrially produced perfection and asserting the presence of the 'hand'. This is not to say that the hand-made

does not aspire to perfection. Perfection that is sought in the making of the hand-made object, however, is not standard numeric perfection. The elusive quality of perfection is something to strive for, an ideal, in the mind of the maker. Imperfection is most often the reality. As Barbara Heath (2000, p.10) says of her own methods, 'I seek to make the work that I am working on perfect; when I am ready to acknowledge its imperfection is when I accept that the work is finished.'

By achieving something close to perfection, in a series of similar forms, ones attention is drawn to the slight differences. Gwynn Hanson Piggot, known for her groupings of ceramic vessels that evoke still-life paintings, makes forms that echo familiarity. The forms express stillness and life. Stillness, in the arrangement of forms; life, in the subtle nuance created by the processes of wheel-throwing and the effect of wood-firing.

Just as perfection remains elusive in the hand-made, the opposite seems to be true in the case of industrial production. At least, imperfection in the machine-made becomes more elusive when it is actively sought after. This may be related to the relative boundaries of control over the process. Imperfection occurs naturally in the hand-made, because the level of control is more relaxed. Machines are not capable of relaxing this control unless they are programmed to, but then the outcome is pre-determined. An approach, echoed in traditional Japanese ceramics, especially in the wood-firing process, is to encourage the uncontrollable variables in the process. This is helped, in the first instance, in the choice of clay as a material. Depending on the clay type and variables such as the firing process, the accidental comes into play. The use of porcelain and the technique of slip-casting, enable thin-walled forms which have a tendency to warp in firing.

The artist and ceramic designer Marek Cecula pushes this concept to the extreme in his work *Burned Again* (fig. 8), part of a project called 'In dust real', that subjected industrially-manufactured porcelain domestic wares to the forces of an *anagama* wood-fired kiln. The objects that come out of this collision of porcelain and wood-firing, exist in complex cultural matrixes and hierarchies of values, traditions and meanings (de Waal, 2006).

fig. 8

The work relies on the familiarity and established associations of the original porcelain forms, in order to dis-orient the viewer. Cecula effectively displaces the context of the objects and applies a fictional narrative that creates an alternative history.

By taking an industrially produced form and working backwards, re-making the object by hand, one inevitably disrupts the aura of anonymity that one expects from industrial objects. In fact, anything that requires the handling of the piece, taking it out of the mould or glazing each piece individually, adds another layer of inconsistency. I refer to this, in my own work, as the re-cycling of forms as there is a plethora of 'ready made' objects that lend themselves to this process. I was curious to explore the notion of preciousness that may result from the substitution of ceramic for plastic, in particular. Even though the plastic object, a juice bottle for example, is close to perfection through its method of production, functionally as well as aesthetically, the change in material can take the object from the disposable to the desirable.

While conveying quite different approaches to the subject matter, the separate exhibited works contribute to a broader picture. For example, references to the production-line allude to the context of the production process and the final destination of the product. There is however, no linear progression of ideas in the display of individual works. They are presented in varying stages of completion, in order to reveal stages of the making process. At the beginning of this project I envisaged that they would contribute to the development of designs suited to manufacture (I soon realised that this was beyond the scope of the project). In this sense, they represent the germination of ideas that could be applied to functional ceramics, such as architectural lighting and surfaces, tableware, or even jewellery. In most cases, the final product wasn't in mind at the beginning of the process, but presented itself during the experimental phase.

In some pieces, the intention is to convey the transformative potential of materials and the possibilities inherent in the making process. The unfinished nature of the elements on display encourages the audience to engage with the work and imagine the final outcome. Other devices, such as drawings reminiscent of blue-prints, give clues to the intended outcome. Even this aspect is open to interpretation, as the outcome cannot be pre-determined. That is the contradiction presented in the use of the blue-print, which has to be drawn after the object has been made. In this way, the transition from the two-dimensional (drawings) to three-dimensional form was explored. Metaphorically, this related to the idea becoming actuality, from virtual space to the real.

An overall reading of the exhibition, as it is constructed, conveys the influence of the hand in the production process, or the interactions between the hand, mind, material and process that contribute to the making of objects. It reveals the complexity of the process in

the variables that present themselves, and the unexpected results that can occur if control over the process is relaxed along the way. The outcomes put a more positive slant on imperfection and the role that chance and accidents can play. They also suggest the possible integration of these ideas in the development of industrially produced objects.

These are aspects that have infiltrated into my own practice. In a sense it has been a parallel exploration that has compared my own tendency towards perfectionism to the ideals held by industry. It has often been a challenging process to allow a more flexible and intuitive approach to object making. Nevertheless, I have found it beneficial to utilise the inherent qualities of materials instead of trying to control them. Instead of problems they become features in themselves that reflect the natural aspects of the process, and are therefore closer to reality. This could be described as cultivating the emergent, or resolving the apparent contradictions between freedom and control inherent in the processes of making.

Concluding Comments

Technology advances and changes so rapidly that we are constantly adapting to the 'next big thing'. Our senses have become accustomed to this; the new replaces the old, one thing replaces another. This is typically seen as 'progress', as it supports the notion of growth in capitalist societies. However, there is little time to absorb and understand the consequences.

The hand, once central to making, has been displaced in many professions where digital technologies offer a seamless transition from design to manufacture. The resulting product is often indicative of this process, where human error and intuition do not enter the equation. This leads to a prevalent aesthetic that favours smooth surfaces, pre-fabricated materials and uniformity. The research points to the acceptance of a 'manufactured' aesthetic in the built environment, and suggests that this is partly the result of a disconnection to materials and processes on the part of the 'makers', architects and designers who in fact are not directly involved with making.

This separation from making, a by-product of the transition from manual to mechanical labour due to industrialisation, has been sufficiently embedded in the fabric of consumer societies to represent the norm. Proponents of crafted work are the minority in developed countries, seeking to find a niche in the global market-place. Craft has become a 'unique-selling-point' in designer products, as a point of differentiation exemplifying the unique. But is there a genuine or fundamental understanding of the issue at hand? This design trend could be a reflection of the innate desire for qualities inherent in the hand-made, or simply a trend.

In carrying out this research, the aim was to discover for myself some of the intricacies of this debate. The project work sought to explore ways that re-established connections between the hand and the object-making process, on the premise that, as consumers, we may have more of a connection to objects and environments that have had a direct human input. This process highlighted the importance of understanding materials through making and how this may inform the design process.

The work suggests the possibility of integrating a 'human element' into the design and manufacturing process. Without having access to a real industrial setting, or the reality of industry, the outcomes remain hypothetical (although expressed through exhibition). The absence of a significant ceramic industry in Australia has been a restriction in terms of opportunities for direct experience, in the form of internships or other relationships. My understanding of industrial processes and the constraints of production have therefore been indirect and observational only. I have expanded this knowledge as much as possible, by

visits to commercial ceramic manufacturers in Japan and Europe, and to studio ceramicists locally who have had experience working in industry. During the research I identified with designers who have worked for industrial ceramic manufacturers and developed their artistic practises in parallel. This seemed to provide a unique perspective from which to validate their artistic concerns.

With this in mind, further research would benefit from the development and testing of ideas within the context of industry. This may demonstrate the potential of integrating an experimental or materials-based approach into the design process. The design industry's current interest in craft is encouraging in that it appears to be stimulating connections between art and industry. It is through these connections, brought about by research, discourse and application of ideas, that we may gain a deeper understanding of why the hand is still central to making.

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APPENDIX

Documentation of MFA Exhibition:

The CD provided contains images of the exhibition 'fault-lines', which may be viewed as a slide-show using PowerPoint (MS), or by selecting the jpeg images individually.

Files:

1) Documentation of MFA Exhibition.ppt
2) f1.jpg
3) f2.jpg
4) f3.jpg
5) f4.jpg
6) f5.jpg
7) f6.jpg
8) f7.jpg
9) f8.jpg
10) f9.jpg
11) f10.jpg
12) f11.jpg
13) f12.jpg
14) f13.jpg
15) f14.jpg
16) f15.jpg
17) f16.jpg